

Course guide 270743 - COR - Cognitive Robotics

Last modified: 02/02/2024

Unit in charge:	Barcelona School of Informatics
Teaching unit:	1042 - URV - Universitat Rovira i Virgili.

Degree: MASTER'S DEGREE IN ARTIFICIAL INTELLIGENCE (Syllabus 2017). (Optional subject).

Academic year: 2023 ECTS Credits: 4.5 Languages:

LECTURER

Coordinating lecturer:

Others:

TEACHING METHODOLOGY

1. To understand the main types of cognitive robots and their driving requirements (engineering operations, navigation, cooperation) Methodology: case studies

2. To understand advanced methods for creating highly capable cognitive robots Methodology: lectures and classroom slides, implement and compare 2 core methods with computer simulation

3. To dive into the recent literature, and collectively synthesize, clearly explain and evaluate the state of the art in cognitive robotics Methodology: oral presentation

4.To apply one or more core reasoning methods to create a simple agent that is driven by goals or rewards Methodology: code programming

LEARNING OBJECTIVES OF THE SUBJECT

CONTENTS

Planning and Acting in the World.

Description: Monitoring and Diagnosis Planning Missions

Interacting with the world: state-awareness

Description: SLAM Cognitive Vision Navigation and Manipulation Human-Robot Interaction



Fast, large-scale reasoning: planning for future

Description: Optimality and soft Constraints Incremental methods

ACTIVITIES

Implementation of theoretical contents into simulated environments

Full-or-part-time: 69h Theory classes: 27h Laboratory classes: 6h Self study: 36h

Teamwork with simulated robots

Full-or-part-time: 43h 30m Laboratory classes: 7h 30m Self study: 36h

GRADING SYSTEM

- 1. Oral presentation 20%
- 2. Reports of lab sessions 30%
- 3. Final project 50%
- (*) There are no exams.